



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/711,899	10/12/2004	Huajie Chen	FIS920040107US1	5898
29154	7590	02/12/2008	EXAMINER	
FREDERICK W. GIBB, III			PHAM, LONG	
Gibb & Rahman, LLC				
2568-A RIVA ROAD			ART UNIT	PAPER NUMBER
SUITE 304				2814
ANNAPOLIS, MD 21401				
			MAIL DATE	DELIVERY MODE
			02/12/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/711,899	CHEN ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Long Pham	2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 28 November 2007.
- 2a) This action is **FINAL**.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 8,9,11-14,35,36,38-42 and 44-47 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) 8,9, 11-14, 42, 44-47 is/are allowed.
- 6) Claim(s) 35,36 and 38-41 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ .                                    |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ .  | 6) <input type="checkbox"/> Other: _____ .                        |

## DETAILED ACTION

### **Rejections and/or objections necessitated by the amendments**

#### ***Claim Rejections - 35 USC § 102***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 35, 38, and 39 are rejected under 35 U.S.C. 102(b) as being anticipated by Hite et al. (US pat 4,863,878).

With respect to claim 35, Hite et al. teach a field effect transistor comprising (see figs. 1A-1D and 2A-2D and associated text):

A silicon substrate 1;

A silicon layer 9 directly on said top surface of the silicon substrate, the silicon layer comprising dopants (source/drain);

wherein said silicon substrate comprises an oxidized portion 3 directly adjacent said epitaxial silicon layer and wherein said oxidized portion has an oxygen content below an amount which would prevent epitaxial growth of said epitaxial silicon layer from said oxidized portion and further above an amount required to substantially limit said dopants within said epitaxial silicon layer from moving into said silicon substrate (see epitaxial layer 7 or 9 or 27 is able to grow thereon);

With respect to claim 38, Hite et al. further teach the silicon is doped with source/drain dopants. Further, how the silicon layer is formed has not been given patentable weight since claim is directed to a device.

With respect to claim 39, Hite et al. further teach source/drain regions are formed in the silicon layer.

#### ***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 36, 40, and 41 rejected under 35 U.S.C. 103(a) as being unpatentable over Hite et al. (US pat 4,863,878) as applied to claims 35, 38, and 39 above, and further in view of Thompson et al. (US pat 6,020,244).

With respect to claim 36, Hite et al. fail to teach doping the silicon layer with halo dopants that are different from source/drain dopants.

Thompson et al. teach doping halo dopants that are different from source/drain dopants into a silicon source/drain layer to achieve reduction in leakage current and improvement in punchthrough characteristics. See fig. 1 and associated text and col. 4, lines 35-45.

It would have been obvious to one of ordinary skill in the art of making semiconductor devices to incorporate the teaching of Thompson et al. into the device of Hite et al. to attain the above benefit.

With respect to claim 40, Hite et al. fail to teach forming isolation regions in the substrate or silicon source/drain layer.

However, the formation of isolation regions a silicon substrate and a silicon layer for the purpose of electrically isolation is well-known in semiconductor art.

With respect to claim 41, Hite et al. further teach the top surface of the silicon substrate is essentially damaged (see claims) but fail to teach removing native oxide from the silicon substrate.

However, the removal of unwanted native oxide from a surface of silicon substrate is well-known.

#### ***Response to Arguments***

Applicant's arguments with respect to claims 35, 36, and 38-41 have been considered but are moot in view of the new ground(s) of rejection.

#### ***Allowable Subject Matter***

Claims 8, 9, 11-14, 42, and 44-47 are allowed.

#### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Long Pham whose telephone number is 571-272-1714. The examiner can normally be reached on Mon-Frid, 10am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on 571-272-1705. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Long Pham/

Application/Control Number: 10/711,899  
Art Unit: 2814

Page 5

Primary Examiner, Art Unit 2814

/L. P./

Primary Examiner, Art Unit 2814